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ABSTRACT

The validity of teacher locus of control (TLOC) as measured by an instrument adapted for this purpose was studied. The construct refers to the individual's perception that changes in his or her environment result from internal or external factors. An adaptation of a scale developed by R. C. Taylor et al. (1981) was used to measure TLOC. The first study investigated the reliability of the scale using data from 54 primary and secondary teachers (35 female and 19 male) in a course on classroom-based research. The external criterion was performance ratings of these teachers by their supervisors. Discriminant analysis of the instrument indicated its efficacy in differentiating internals from externals. The second study tested the hypothesis that more effective teachers would be more internal as compared with less effective colleagues. Thirty female and 10 male teachers from one secondary school completed the TLOC instrument. They were separated into effective and less effective teachers by principals' ratings. Teachers rated as more effective were in fact more internal. To the extent that supervisors' evaluations are reliable and valid measures of teacher performance, locus of control can be considered to have predictive validity. Four tables present study data. (SLD)

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PREFACE

Introduced by Rotter (1966), the locus of control has been regarded by researchers as an important construct in the study of educational processes. Briefly the construct refers to an individual's perception of the fact that changes in his environment are the result of either internal or external factors. As Dr Soh Kay Cheng explains in the first part of his report, some people are "internals" (ie those who are confident of their own efficacy in dealing with environmental events), others are "externals" (ie those who see themselves as having little control over their environment).

The primary purpose of Dr Soh's study as reported here is to establish the validity of the teacher locus of control as measured by an instrument adapted by Dr Soh. In his carefully conceived research design, Dr Soh delineated two stages in his research. The first stage attempted to determine the reliability of the instrument and the usefulness of individual items to differentiate between "internals" and "externals". Then at the second stage, Dr Soh tested the hypothesis that more effective teachers (as determined by their principals' ratings) are more "internal" as compared with their colleagues in the same school, rated as less effective.

In the context of our search for additional selection instruments, Dr Soh's study is very helpful in providing us with data to decide on the usefulness of instruments that have the ability to predict with some degree of success the teaching effectiveness of our trainees while under training and when they are full-fledged teachers.

10 May 1988

Ho Wah Kam
Head/ERU

In life, some people believe in their own efficacy in dealing with the environment and see what has happened to them as the effects of their own doing. Others, on the contrary, see what has or has not happened to them as being due to more powerful others, fate, or chance; such feelings of helplessness and powerlessness imply a disbelief in their own efficacy in influencing life events.

In the teaching profession, some teachers may be "internals" with faith in their own efficacy in influencing student achievement and behaviour. Other teachers may be "externals" who do not see themselves as having an effect on the teaching environment and the students. It is readily appreciated that internal teachers will be more effective as a result of their being more ready to try and more resilient to stress.

The construct of perceived efficacy or locus of control has been studied extensively over the past thirty years in contexts other than education. Internals have been found to be better able to withstand health problems, property and business loss and other stressful life events (Lefcourt,1981). It is only in more recent years that attention has been paid to teachers' perceived efficacy or internality.

It has been found that the extent to which the teacher believed he or she had the capacity to affect student performance was the most powerful teacher attribute related to learning outcomes (McLaughlin & Marsh, 1978). Teachers in the more

effective schools reported a stronger sense of efficacy and felt more responsibility for their students' learning (Brookover & Lezotte, 1979). Consistent with these, internal teachers were seen as fostering more of an origin-like climate by their students, who also tended to have higher academic achievement (Sadowski & Woodward, 1981 and 1983).

Among experienced teachers, locus of control has been found to correlate positively with a more flexible, consultative and student-oriented attitude (Soh, 1984). Internal teachers also tended to hold more positive attitudes towards change and responsibility (Soh, 1987 and 1988). Sadowski, Blackwell & Willard (1985) compared student-teachers and found internals rated by their university supervisors as making more use of a variety of resources and materials, using more appropriate motivational techniques, establishing rapport, using appropriate reinforcement and being more able to motivate. Of late, Sadowski, Blackwell & Willard (1986) reported a significant positive relationship between student-teachers' internality and their supervisors' ratings on teaching performance.

Another aspect of teachers' perceived efficacy that calls for attention is its relationship with perceived stress. It has been clearly established in contexts other than education that locus of control serves to moderate the impact of stress arising from life events (Lefcourt, 1981). Some recent studies indicate that the same relationship exists in the education context.

McIntyre (1984) reported that internal teachers tended to experience a lower degree of emotional exhaustion and depersonalization. Likewise, Sadowski & Blackwell (1985) and Sadowski et al. (1986) reported negative correlations between internality and stress among student-teachers, while Soh (1986) found a similar relationship for experienced secondary school teachers and technical college lecturers.

To the extent it affects teacher perception of their students and the teaching environment, to the extent it predicts teacher resilience against job stress and, more generally, to the extent it indicates a psychologically healthy self-actualized personality, teacher internality or perceived efficacy should be of not only theoretical but also practical interests to teacher education institutions.

The purpose of this study was to establish the validity of teacher locus of control, as measured by the scale developed by Taylor, Sadowski & Peacher (1981) and adapted by Soh (1986). The external criterion was experienced teachers' performance ratings made by their supervisors in one Singapore school. Two discriminant analyses were run on two groups of teachers, the first for checking reliability of the scale and the second for ascertaining the construct's ability indifferentiating more effective teachers from the less effective ones.

Study I

The first study ascertained the reliability of the TLOC

scale and the efficacies of individual items therein in differentiating internals from externals.

Fifty teachers who attended a course on classroom-based research provided the data. These teachers either volunteered to attend the course or were nominated by the school principals to attend. The mean years of teaching experience is 19.98 (S.D. 8.48). Thus, they would most probably be atypical in terms of being experienced teachers who tend to be more highly motivated as compared with teachers in general; and, there is also a preponderance of female primary teachers. It is however of note that the correlation between years of teaching experience and full scale scores is 0.220, being not significant.

The responses were arranged in descending order of total scores and then divided into two equal halves of 27 highs (internals) and 27 lows (externals). With two contrasted groups thus formed, the discriminant analysis was then run twice. In the first run, all 20 items were included. In the second run, three items (Nos 2, 6 and 11) with <u>negative</u> classification coefficients were excluded, as these posed interpretation problems in the substantive sense. The results are shown in Table 2.

For the first run, the Mahalanobis distance is 317.282 ($p<.01$). There were no cases of miss-classification. This indicates that the internals and externals have been

successfully separated by the total scores, as would be expected. The corresponding adjusted coefficient of multiple determination is 0.981 ($p<.01$). A Cronbach's alpha of 0.675 was obtained for this scale of 20 items.

For the second run, with three items eliminated, the Mahalanobis distance is 284.736 ($p<.01$). As there were again no cases of miss-classification, the two groups have been successfully separated by the 17 item scale. The corresponding adjusted coefficient of multiple determination is 0.981 ($p<.01$). The Cronbach's alpha is now raised to 0.886, indicating that the shorter version was more internally consistent.

A comparison of the Mahalanobis distances resulted in a Roa's Q-statistic of 1.240. This was evaluated via the F-statistic with 3 and 33 degrees of freedom. The result shows no significant differences between the two Mahalanobis distances. In short, the shorter version is as effective as the longer version in differentiating the internals from the externals. Thus the reliability of the 17-item scale is evident.

Study II

The second study tested the hypothesis that more effective teachers would be more internal as compared with their less effective colleagues. In other words, teacher internality as measured by the Scale would be able to separate two groups of teachers with differential effectiveness.

Forty teachers from one secondary school completed the 20-item scale. They were separated into two contrasting groups of more effective and less effective teachers by their principal, using the annual staff evaluation as a criterion (Table 3). The median years of teaching experience for these teacher is 7.68 and there is no difference between the two groups.

The discriminant analysis was run twice, once for all 20 items and once for the 17 selected items as in Study I. As shown in Table 4, for the first run, the Mahalanobis distance is 60.929 ($p<.01$). The miss-classification rate is 12.5%. The corresponding adjusted coefficient of multiple determination is 0.885 ($p<.01$). This 20-item scale has a Cronbach's alpha of 0.791.

For the second run on 17 items, the Mahalanobis distance is reduced to 38.577 ($p<.01$). The miss-classification rate is now increased to 17.5%. The corresponding adjusted coefficient of multiple determination is 0.847 ($p<.01$). For this shorter version, the Cronbach's alpha is 0.772, marginally lower than the full version.

Nonetheless, a comparison of the two Mahalanobis distances yielded a Q-statistic of 2.637. With 2 and 19 degrees of freedom, this is not significant. Thus, the shorter version was as effective as the longer one in discriminating between more effectiveness and less effectiveness.

Discussion

Although researchers have used different scales to measure teachers' perceived efficacy and studied its relationships with various attitudinal and behavioural measures of teachers and pupils, the construct of teacher internality-externality has been well established.

The criterion measures used for validation purposes by the American studies cited earlier included Origin-Climate Questionnaire (deCharm, 1976), I-E Scale (Rotter, 1966), Pupil Control Ideology Form (Willower et al., 1967), Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965), students' GPA, and student teaching performance.

In the Singapore context, the teachers' perceived efficacy as measured by the teacher locus of control scale has been repeatedly found to correlate positively with teaching behaviours, educational attitudes, attitudes towards change and responsibilities, and negatively with teacher stress. These results evidence the convergent validity of the scale.

The present study further demonstrates the discriminating power of teacher locus of control by using an external criterion, that is, experienced teachers' performance ratings given confidentially by their supervisors. In the Singapore system, a teacher is annually evaluated by the vice-principal or senior assistant who is the reporting officer. The evaluation is then endorsed or moderated by the principal who is the countersigning

officer. Such ratings are based on the teachers' performance in various aspects of work in school, both intra- and extra-curricular. Although the expectations and hence the evaluation made by senior personnel may vary from school to school, it is reasonable to expect the evaluation within a school to be sufficiently valid, for the reason that the school ethos provides a common frame of reference against which a teacher's performance is assessed and therefore comparison between teachers can be reliably achieved.

In view of the research findings available from both local and overseas studies, the finding of the present study that teachers rated by supervisors as being more effective are also more internal is consistent with what the theory predicts. To the extent that the principal's and senior school personnel's evaluation provides a reliable and valid measure of the teachers' performance, locus of control studied here can be deemed to have predictive validity in that it discriminates, substantially though not perfectly, between teachers judged by an external criterion which would have taken into account their performance in the various facets of work and life in school.

Table 1

	Primary	Secondary	Total
Male	17	2	19
Female	30	5	35
Total	47	7	54

Table 2

	First Analysis	Second Analysis
Respondents	54	54
Items	20	17
Mean	79.389	61.908
S.D.	6.523	8.473
Mahalanobis D2	317.282	284.736
Miss-classified %	0.00	0.00
Adjusted R2	0.981	0.981
Cronbach's alpha	0.675	0.886

Table 3

	More Effective	Less Effective	Total
Male	5	5	10
Female	15	15	30
Total	20	20	20

Table 4

	First Analysis	Second Analysis
Respondents	40	40
Items	20	17
Mean	71.375	61.900
S.D.	9.710	8.473
Mahalanobis D2	60.929	38.577
Missclassified %	12.50	17.50
Adjusted R2	0.885	0.847
Cronbach's alpha	0.791	0.772

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